

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3161914****Date:02/12/2021****Subject Name:Renewable Energy Engineering****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Explain need for renewable energy sources. **03**
 (b) Distinguish between global radiation and diffuse radiation. Which is applicable during cloudy atmosphere? **04**
 (c) Explain construction and working of Pyrheliometer with a neat sketch. **07**
- Q.2** (a) Classify solar power plants. **03**
 (b) List advantages of solar water heating. Also give some applications of solar water heating. **04**
 (c) Explain working of compound parabolic concentrator. **07**
- OR**
- (c) Discuss effects of various parameters on performance of flat plate collector. **07**
- Q.3** (a) What is pitch control of wind turbine? **03**
 (b) Explain solar furnace in brief. **04**
 (c) Write a short note on: Types of vertical axis wind turbine rotors. **07**
- OR**
- Q.3** (a) What do you mean by Teetering of wind turbine rotor? **03**
 (b) Discuss site selection criteria for wind energy conversion system. **04**
 (c) Explain basic components of wind energy conversion system with block diagram. **07**
- Q.4** (a) Discuss future prospects of MHD generation. **03**
 (b) Explain with neat sketch the vapour dominated geothermal system. **04**
 (c) Describe the Biomass conversion technologies. **07**
- OR**
- Q.4** (a) How pH value and temperature of substance affects biogas generation? **03**
 (b) List advantages and disadvantages of biogas energy. **04**
 (c) State the principle of Ocean Thermal Energy Conversion (OTEC). Explain working of closed cycle OTEC system. **07**
- Q.5** (a) What is the need for economic analysis of renewable energy system? **03**
 (b) What is present worth? How it can be calculated? **04**
 (c) Discuss materials for MHD generators. **07**
- OR**
- Q.5** (a) Explain initial and annual cost for renewable energy system. **03**
 (b) Explain clean development mechanism in brief. **04**
 (c) List the geothermal resources. Explain binary fluid hydrothermal system. **07**
